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PATENT & TRADEMARK OFFICE

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of removing photoresist from a substrate, comprising:

~~sequentially~~ treating the photoresist with a first reactant to cause swelling, cracking or delamination of the photoresist; ~~and~~

subsequently treating the photoresist with a second reactant to chemically alter the photoresist; and

subsequently removing the chemically altered photoresist with a third reactant.

2. (Original) The method of claim 1, wherein the photoresist is formed by ion implantation.

3. (Original) The method of claim 2, wherein the ion implantation was performed at a dose of 3×10^{15} ions/cm^2 or higher.

4. (Original) The method of claim 1, wherein the first reactant is supercritical carbon dioxide ($SCCO_2$).

5. (Original) The method of claim 4, wherein the supercritical carbon dioxide ($SCCO_2$) is at a temperature of 100-150°C and a pressure of 150-200 bar.

6. (Original) The method of claim 1, wherein the second reactant is an ozone-based reactant.

7. (Original) The method of claim 6, wherein the ozone-based reactant is ozone vapor.

8. (Original) The method of claim 6, wherein the ozone-based reactant is ozone gas mixed with water vapor.

9. (Original) The method of claim 7, wherein the ozone vapor is at a temperature of 105-115°C and a pressure of 60-80 kPa.

10. (Original) The method of claim 7, wherein the ozone vapor is at a concentration of 90,000 ppm or greater.

11. (Original) The method of claim 1, wherein the chemically altered photoresist is removed by rinsing.

12. (Original) The method of claim 1, wherein the third reactant is deionized water.

13. (Original) The method of claim 1, wherein the photoresist is normal photoresist.

14. (Original) The method of claim 1, wherein the photoresist is a photoresist damaged by etching.

15. (Original) The method of claim 1, wherein the photoresist includes at least one of organic residue and organic contaminants.

16. (Currently Amended) A method of removing photoresist, from a substrate, comprising:

~~sequentially~~ treating the photoresist with supercritical carbon dioxide ($SCCO_2$; ~~and~~

subsequently treating the photoresist with an ozone-based reactant; and

subsequently removing the photoresist with deionized water.

17. (Original) The method of claim 16, wherein the supercritical carbon dioxide ($SCCO_2$) is at a temperature of 100-150°C and a pressure of 150-200 bar.

18. (Original) The method of claim 16, wherein the ozone-based reactant is ozone vapor at a temperature of 105-115°C and a pressure of 60-80 kPa.

19. (Previously Presented) A method of removing photoresist from a substrate, comprising:

loading the substrate into a chamber;

injecting a first reactant into the chamber and converting the first reactant to supercritical condition;

maintaining contact between the substrate and the supercritical first reactant;

depressurizing the chamber;

injecting a second reactant into the chamber;

maintaining contact between the substrate and the second reactant;

purging the chamber and unloading the substrate;

removing the photoresist; and

drying the substrate;

wherein injecting the first reactant and injecting the second reactant are performed sequentially.

20. (Original) The method of claim 19, further comprising:

before injecting the second reactant, loading the substrate into a second chamber, wherein said maintaining and purging occur in the second chamber.

21. (Original) The method of claim 19, wherein the first reactant is supercritical carbon dioxide ($SCCO_2$).

22. (Original) The method of claim 21, wherein the supercritical carbon dioxide ($SCCO_2$) is at a temperature of 100-150°C and a pressure of 150-200 bar.

23. (Original) The method of claim 19, wherein the second reactant is an ozone-based reactant.

24. (Original) The method of claim 23, wherein the ozone-based reactant is ozone vapor.

25. (Original) The method of claim 23, wherein there is a 10-15° difference between the second chamber and the ozone-based reactant.

26. (Original) The method of claim 25, wherein the second chamber is at a temperature of 105°C and the ozone-based reactant is at a temperature of 115°C and a pressure of 60-80 kPa.

27. (Original) The method of claim 23, wherein the ozone-based reactant is at a concentration of 90,000 ppm.

28. (Original) The method of claim 19, wherein the rinse is a deionized water rinse.

29. (Original) The method of claim 21, wherein the supercritical carbon dioxide ($SCCO_2$) causes swelling, cracking or delamination of the photoresist.

30. (Original) The method of claim 24, wherein the ozone vapor alters the photoresist into a water soluble product.

Claims 31-50 (Cancelled).

51. (Previously Presented) The method of claim 1, wherein the photoresist is treated with the first reactant, then treated with the second reactant.

52. (Previously Presented) The method of claim 51, wherein the first reactant is supercritical carbon dioxide ($SCCO_2$) and the second reactant is an ozone-based reactant.

53. (Previously Presented) The method of claim 52, wherein the photoresist is treated with the second reactant and then is removed with the third reactant.

54. (Previously Presented) The method of claim 53, wherein the third reactant is deionized water.

55. (Previously Presented) The method of claim 16, wherein the photoresist is treated with the supercritical carbon dioxide ($SCCO_2$), then treated with the ozone-based reactant.

56. (Previously Presented) The method of claim 55, wherein the photoresist is treated with the ozone-based reactant and then is removed with the deionized water.

57. (Previously Presented) The method of claim 19, wherein the photoresist is treated with the first reactant, then treated with the second reactant.

58. (Previously Presented) The method of claim 57, wherein the first reactant is supercritical carbon dioxide ($SCCO_2$) and the second reactant is an ozone-based reactant.

59. (Previously Presented) The method of claim 58, wherein the photoresist is treated with the second reactant and then is removed with the third reactant.

60. (Previously Presented) The method of claim 59, wherein the third reactant is deionized water.